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# Teaching Sustainability Concepts: Information and Communications Technologies and the United Nations Millennium Development Goals

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# Teaching Sustainability Concepts: Information and Communications Technologies and the United Nations Millennium Development Goals

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## Abstract

Pace University teaches an "Issues in Information Systems" course in the final year of its Master of Science in Information Systems program. Currently, the class explores the potentials for using Information Systems and Technology to achieve sustainable progress with the eight United Nations Millennium Development Goals (MDGs). In September 2000 these international development goals were formally accepted by all 192 UN member states and many other international organizations under the United Nations Millennium Declaration. These 192 parties agreed to achieve the goals by 2015. In our course, sustainable development is broadly interpreted using Brundtland's 1987 concept of development that meets present needs without compromising the abilities of future generations to meet their own needs. We designed an Applied Sustainability Learning Model with three layers of learning to attain educational competency in the area of Applied Sustainability. These are the Domain Layer, the Sustainability Layer and the Information and Communications Technology (ICT) Layer. This brief abstract describes the current assignment structure the students are asked to complete during this course. The Hopefully, these and other assignments may help in an attempt to codify curriculum requirements necessary to apply Information Systems and Technology trans-globally to foster economic, societal and environmental sustainability.

**Keywords:** Sustainability, Green IS, United Nations Millennium Goals, ICT education and curricula, IS, ICT

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## INTRODUCTION

Pace University teaches an “Issues in Information Systems” course in the final year of its Master of Science in Information Systems program. Currently, the class is exploring the potentials for using Information Systems and Technology to achieve sustainable progress with the eight United Nations Millennium Development Goals (MDGs).<sup>1</sup> In September 2000 these international development goals were formally accepted by all 192 UN member states and many other international organizations under the United Nations Millennium Declaration. These 192 parties agreed to achieve the goals by 2015. In our course, sustainable development is broadly interpreted using Brundtland’s 1987 concept of development that meets present needs without compromising the abilities of future generations to meet their own needs.

This brief abstract describes the current assignments the students are asked to complete during this course. Hopefully, these and other assignments may help in an attempt to codify curriculum requirements necessary to apply Information Systems and Technology trans-globally to foster economic, societal and environmental sustainability.

## ASSIGNMENT STRUCTURE

We designed an *Applied Sustainability Learning Model* with three layers of learning to attain educational competency in the area of Applied Sustainability. These are the *Domain Layer*, the *Sustainability Layer* and the *Information and Communications Technology (ICT) Layer*.

The students in the course are currently asked to complete six assignments along with an *introduce-yourself* assignment. These assignments are designed to provide competency in the three layers of the Applied Sustainability Learning Model.

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<sup>1</sup>Wikipedia has a good précis of the goals and measures; follow any of these links

[Goal 1: Eradicate extreme poverty and hunger](#)

[Goal 2: Achieve universal primary education](#)

[Goal 3: Promote gender equality and empower women](#)

[Goal 4: Reduce child mortality rate](#)

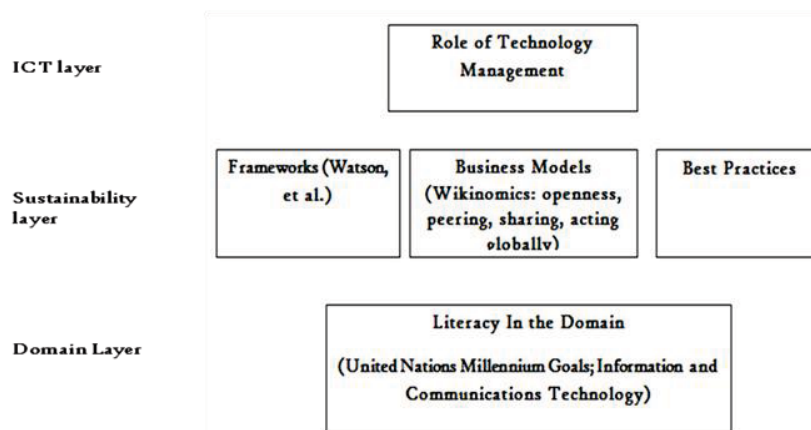
[Goal 5: Improve maternal health](#)

[Goal 6: Combat HIV/AIDS, malaria, and other diseases](#)

[Goal 7: Ensure environmental sustainability](#)

[Goal 8: Develop a global partnership for development](#)

## Knowledge areas for Studying Applied Sustainability



**Figure 1.** Applied Sustainability Learning Model

Assignments #1 creates basic literacy in the domains of ICT and the United Nations Millennium Goals; Assignments #2, #3 and #4 create competency in the languages of Sustainability; and Assignments #5 and #6 integrate Sustainability and ICT concepts.

1. Familiarization with the MDGs and ICT
2. Sustainability Frameworks
3. Network Tools for Sustainability (openness, peering, sharing, acting globally)
4. Sustainability Practices in Organizations
5. The Role of the CIO
6. Course Paper: Sustainability and one MDG

**Assignment #1** is used to familiarize students with all eight Millennium Development Goals (MDGs) by requiring a discussion of each goal and the ICT methods currently used to address the goal. These discussions are informed by ideas presented in a set of TED.com videos. **Assignment #2** is designed to provide a foundation in Green IS and sustainability frameworks. The students apply the sustainability frameworks developed in 'Green IS: Building Sustainable Business Practices' (Watson, et al., 2007) to the MDGs. These frameworks are *Information Drives* and *Green IS IT Opportunities*. **Assignment #3** applies Business Models to the MDGs and Sustainability. It brings the concepts of collaborative and social networking technologies to bear on these MDGs using Tapcott and Williams 2008 concepts of Openness, Peering, Sharing and Acting Globally presented in *Wikinomics: How Mass Collaboration Changes Everything* (<http://www.wikinomics.com/book/>). **Assignment #4** is designed to educate students in current Best Practices used by companies to articulate their economic, societal and environmental sustainability plans. Each student selects a company and describes the company's current sustainability practices, or lack of these. Then, each student creates a plan to achieve sustainable development and business practices for the next three years for the company under study. **Assignment #5** looks at the role of Technology Management related to a single MDG from the perspective of the CIO of a medium or large company. The task is to create policies and procedures that will foster economic,

environmental and societal sustainability. **Assignment #6** combines the previous assignments into a single paper focusing on a single Millennium Development Goal.

The students are expected to exit the course with a deep and articulate understanding of the complex issues related to global information and communications technologies, sustainability and the MDGs.

The students initially showed a tendency to consider problems outlined in the eight MDGs as though each existed in a single cultural context and could be addressed by a homogenous set of solutions. In the following assignments, results indicated that these students began to understand the sustainability concepts along with the appropriate Information Systems and Technologies that might be used to address these goals. The final two assignments showed a greater appreciation for complex global issues and infrastructures. The course is being offered again in fall 2011.

### ACKNOWLEDGMENTS

This Extended Abstract has benefitted from the contributions and views expressed by participants at the SIGGreen Virtual Workshop of November 2010: <http://siggreen-icis2010-workshop.wikispaces.com/>.

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